

**BELLAS, PATTON & CO.,
Commission Merchants**
3 INSURANCE EXCHANGE BLDG.,
218 La Salle St., CHICAGO.
GRAIN AND PROVISIONS.

Bought or sold for shipment, or carried on margins.
Market Reports furnished to correspondents.

(ESTABLISHED 1855.)

**J. O. Mathewson & Co.,
GENERAL
COMMISSION
MERCHANTS,
AUGUSTA, - GEORGIA.**

**E. B. OWENS & CO.,
Provisions and Grain
BALTIMORE, MD.**

Sell on Track West and to Arrive.
Fine Storage Cellars for Meat and Lard.
Handle all kinds of Grain.
Liberal Advances on Consignments.

REFER TO Western National Bank, Baltimore; Citizens' National Bank, Baltimore; Wm. Ryan & Sons, Dubuque, Iowa; Whitmore Bros., Quincy, Ill.; Bloomington Pork Packing Co., Bloomington, Ill.

L. EVERINGHAM & CO.,
(ESTABLISHED 1865.)

Commission Merchants

200-201 Royal Insurance Building, CHICAGO
Opposite New Board of Trade.

THE PURCHASE AND SALE OF
GRAIN AND PROVISIONS
On the Chicago Board of Trade.
For cash or future delivery, a specialty.

Special information, indicating course of markets,
freely furnished upon request.

W.M. GRIFFITHS. JAMES MARSHALL. GEO. E. DODGE

GRIFFITHS, MARSHALL & CO.,

GRAIN & COMMISSION
MINNEAPOLIS AND DULUTH, MINN.

Orders for Choice Milling Wheat Given Special
Attention.

FLOUR & BROKERS

MILLERS DESIRING TO SELL FLOURS BY SAM-
ple in car lots in the cities of Baltimore, Md., or
Washington, D. C., should communicate with P. H.
HILL, Millers' Agent, WASHINGTON, D. C., and for
Philadelphia, Pa., communicate with HILL &
SCHAFF, Millers' Agents and Grain Brokers, 219
North Broad St, PHILADELPHIA, PA. Highest
references.

**SAM'L E. DUNHAM & CO.,
COMMISSION
Provisions and Grain
ROOM 83,**

Board of Trade, CHICAGO.

The purchase of grain for shipment to home markets
a specialty.

N. S. CLARK.

A. C. MARTIN.

**CLARK & MARTIN,
Commission Merchants
FLOUR, GRAIN,
FEED AND HAY,
No. 51 West Second St., Cincinnati, O.**

**PATTERSON BROS. & CO.,
Commission Merchants**

FOR SALE OF

WHEAT, CORN, OATS, RYE.

DEALERS IN

Seeds, Hominy, Grits, Steam Dried Corn Meal.

44 VINE ST., CINCINNATI.

ORDERS AND CONSIGNMENTS SOLICITED.

ESTABLISHED - - - - - 1876.

**JNO. R. TURRENTINE,
—GENERAL—**

**Merchandise and Produce Broker,
FLOUR, GRAIN, HAY AND RICE.**
Dock Street, WILMINGTON, N. C.

MEMBER OF CHICAGO BOARD OF TRADE.

Refers by permission to A. K. Walker, Esq., cashier
First Nat'l Bank, Hall & Pearsall, Adrian & Vellers,
Merchants, Wilmington; Robt. Carey & Co., New Orleans, La.; Geo. P. Plant & Co., St. Louis, Mo.; Martin & Bennett, Chicago, Ill.

Solicits Orders for Carolina Rice and Peanuts.

**OWEN & BRO.
Commission • Merchants,**
36 Chamber of Commerce, MILWAUKEE.

We give special attention to the purchase and sale
of grain or provisions, for future delivery, here or
in other markets.

Information regarding the present condition and
future outlook for prices furnished on request.

OWEN & BRO.

S. S. STOUT. H. G. UNDERWOOD.

STOUT & UNDERWOOD,

(Formerly Examiners U. S. Patent Office.)

SOLICITORS OF

PATENTS

66 Wisconsin Street,
MILWAUKEE, WIS.

TELEPHONE NO. 502.

**Life Insurance.
NEW ENGLAND MUTUAL
LIFE INSURANCE CO.
OF BOSTON.**

Assets, - - - - -	\$17,846,546.65
Liabilities, - - - - -	\$15,288,761.16
Total Surplus, - - - - -	\$ 2,607,785.49

BENJ. F. STEVENS, Pres't.
JOSEPH M. GIBBENS, Sec'y.

**BOILER INSURANCE.
AMERICAN
Steam Boiler Insurance Company**
OFFICE, 45 WILLIAM ST., NEW YORK.
Cash Capital, - - - - - \$200,000
ASSETS JANUARY 1ST, 1885.
U. S. Gov. Registered Bonds, of which \$100,000 is lodged with the Insurance Department at Albany, N. Y. \$216,138.00
Cash in bank and in office 10,668.72
Premiums in course of collection 16,839.35
\$243,604.33
LIABILITIES.
Reinsurance reserve 40,225.00
All other demands 2,013.27
\$ 43,149.24

WILLIAM K. LOTHROP, President.
WILLIAM E. MIDGLEY, Vice-Pres.
VINCENT R. SCHENCK, Secretary.

Fire Insurance.
Every miller and manufacturer having an
A 1 risk, should apply for insurance in the
Allied Mutual Fire Insurance Companies, of
which S. H. Seamans, Milwaukee, Wis., is
secretary.

**CONNECTICUT
FIRE INSURANCE CO.,
HARTFORD, - CONNECTICUT.**

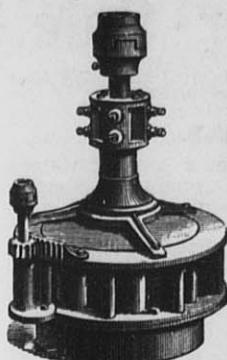
Cash Capital, - - - - -	\$1,000 000 00
Reserve for Reinsurance, - - - - -	580,669.40
Outstanding Claims, - - - - -	90,396.57
Net Surplus, - - - - -	303,683.78

Total Assets, Jan. 1, 1886, - \$1,974,749.75
Surplus to Policy-holders, - \$1,303,683.78

J. D. BROWNE, President,
CHARLES R. BURT, Secretary.
L. W. CLARKE, Ass't Secretary.

**Attention!
CUSTOM and EXCHANGE MILLERS.**

We have made arrangements with Potter & Huntington, whereby we can furnish one of their EXCHANGE TABLES and UNITED STATES MILLER for one year, for \$1.50; the price of the Exchange Table alone is \$1.00. This is probably the best Table ever prepared for Millers doing an Exchange or Custom Business. The range is from 25 to 36 lbs. of flour to each 60 lbs. of wheat, and corresponding amount of bran and middlings. (Toll and waste in milling deducted.) There are twelve Tables each of a different grade of wheat, and each Table a different amount of flour and feed and can be used for any amount of wheat, from two lbs. up to any No. of bushels. There is no guess work about it but all from actual experience. By it the Miller is always sure of his allowance of Toll. Hundreds of them are being sent to all parts of the United States and Canada. Send us One Dollar and Fifty Cents and we will send the Table and credit you for one year's subscription to the UNITED STATES MILLER. Address, UNITED STATES MILLER, 124 Grand Avenue, Milwaukee, Wis.



The "HOPEWELL"
TURBINE
Water Wheel

IS THE BEST.

For full particulars address
A. J. HOPEWELL,
EDINBURG, VA.

Improved + Walsh + Double + Turbine



This wheel has a perfect fitting cylinder gate and draft tube combined, and allows no water to escape when closed.

POWER GUARANTEED

equal to any wheel on the market using equal amount of water. Address for particulars.

B. H. & J. SANFORD,

Phoenix Iron Works,
Sheboygan Falls, Wis.

**STEEL
CAR
PUSHER**

Made entirely of STEEL. ONE MAN with it can easily move a loaded car. Will not slip on ice or grease.

Manufactured by

E. P. DWIGHT,
Dealer in Railroad Supplies, 407
Library St., Philadelphia, Pa.

[Please mention this paper when you write to us.]

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UNITED STATES MILLER

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ULLRICH BINDER

This binder is suitable for binding your copies of the UNITED STATES MILLER for two or more years, any required number can be taken out without disturbing its contents. Binders made for all Publications, for binding Music, etc.

ITS EQUAL CAN NOT BE FOUND.

Send post paid for \$1.10. Address

UNITED * STATES * MILLER,
MILWAUKEE, WIS.

LORD & THOMAS, NEWSPAPER
Advertising, 45 to 49 Randolph St., Chicago, keep this paper on file
and are authorized to make contracts with **ADVERTISERS.**

Flint & Pere Marquette R. R.

LUDINGTON ROUTE.

Fast Freight & Passenger Line.

Freight Contracted on through Bills Lading to all points in

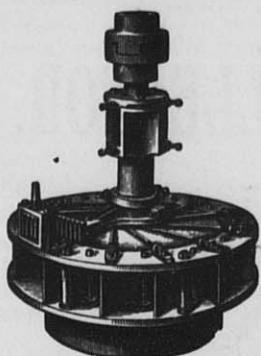
**Michigan, Indiana, Ohio,
New York, Pennsylvania,
New England & Canada.**

AT LOWEST RATES.

All freight insured across Lake Michigan. Passengers save \$2.75 to all points East.

Dock and Offices, No. 50 West Water St., one block from Union Depot.

L. C. WHITNEY,
Gen'l Western Agent.



**JAMES LEFFEL'S IMPROVED
WATER WHEEL,**

Fine New Pamphlet for 1885.

The "OLD RELIABLE" with Improvements, making it the Most Perfect Turbine now in use, comprising the Largest and the Smallest Wheels, under both the Highest and Lowest Heads in this country. Our new Pocket Wheel Book sent free. Address,

**JAMES LEFFEL & CO., Springfield, Ohio,
and 110 Liberty St., New York City.**

[Please mention this paper when you write to us.]



**POOLE & HUNT'S
Leffel Turbine Water Wheel**

Made of best material and in best style of workmanship.

Machine Molded Mill Gearing

From 1 to 20 feet diameter, of any desired face or pitch, molded by our own SPECIAL MACHINERY. Shafting, Pulleys, and Hangers, of the latest and most improved designs.

Mixers and General Outfit for Fertilizer Works.

48th Shipping Facilities the Best in all Directions.

PEOOL & HUNT, Baltimore, Md.

N. B.—Special attention given to Heavy Gearing for Pulp and Paper Mills.

[Mention this paper when you write to us.]

**STEEL
CASTINGS**

Works, CHESTER, PA.

[Mention this paper when you write to us]

FROM 1-4 to 15,000 LBS. WEIGHT.

True to Pattern, sound, solid, free from blow-holes, and of unequal strength.

Stronger, and more durable than iron forgings in any position or for any service whatever.

40,000 CRANK SHAFTS and 30,000 GEAR WHEELS of this steel now running prove this.

CRANK SHAFTS and GEARING specialties.

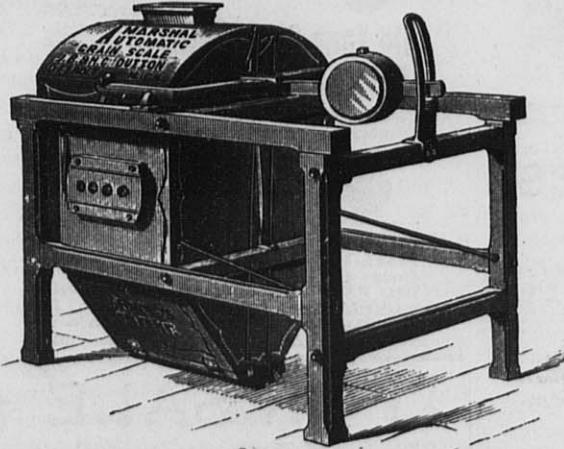
STEEL CASTINGS of every description

Send for Circulars and Prices to

CHESTER STEEL CASTINGS CO.

Office, 407 LIBRARY ST., PHILADELPHIA, PA.

Marshall Automatic Grain Scale



FOR USE IN

FLOUR MILLS,

BREWERIES,

Malt Houses,

ELEVATORS,

Distilleries, * Rice * Mills,

OIL MILLS,

Starch Factories, &c.

This Scale is designed for weighing and registering the amount of grain transferred from one point to another. The weighing and recording is absolutely correct, and the machines are sold with a guarantee to that effect. By their use the miller can tell at any time how much wheat he is using to make a barrel of flour and know at once whether he is milling at a profit or loss. This scale can be used with equal advantage by shippers of grain or others who desire to know how much grain, flour, feed, bran, shorts, screenings, coal (or any other thing that can be spouted), is being transferred, with a perfect record made of same.

J. B. & H. C. DUTTON, Detroit, Mich.

Gentlemen: We have used the Marshall Automatic Grain Scale in our mill for six months, and it has proved entirely satisfactory.

Yours truly,

ELDRED MILLING CO.

J. B. DUTTON & CO., DETROIT, MICH.

No. 52 WOODWARD AVE.

SOLE OWNERS OF THE PATENT.

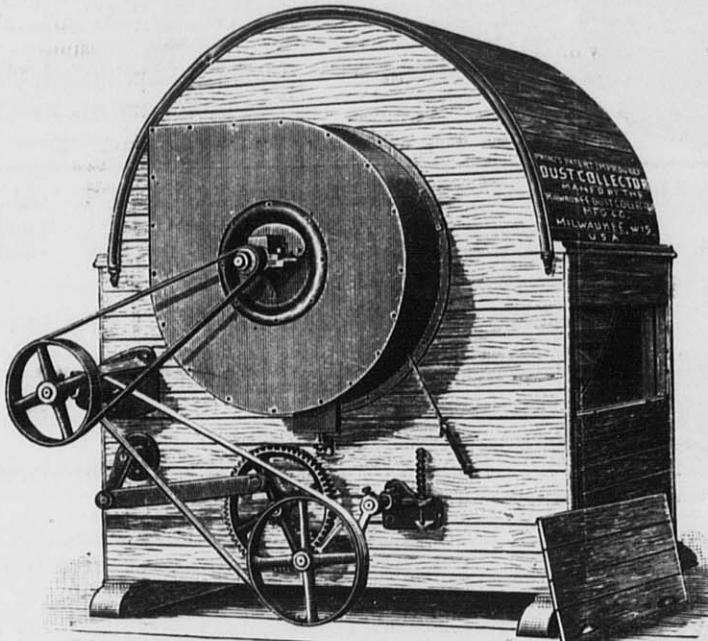
Also handle a full line of Flouring Mill Machinery.

IMPROVED

PRINZ PATENT DUST COLLECTOR.

6000 IN SUCCESSFUL OPERATION.

FIVE SIZES MANUFACTURED.



FIVE SIZES MANUFACTURED.

ADDRESS FOR
"Treatise on Dust Collection," containing 50 pages of testimonials,Milwaukee Dust Collector Mfg. Co.,
MILWAUKEE, WIS.

Howe Scales

AND

HARRISON CONVEYOR

Borden, Selleck & Co.,

GENERAL AGENTS,

CHICAGO, ST. LOUIS, CLEVELAND, CINCINNATI,
48-50 LAKE ST. 612 N 3D STREET. 114 WATER ST. 16 MAIN STREET.

Howe Scales—Over 350 Modifications.

GRAIN TESTERS, FLAX TESTERS,
CAR MOVERS,
BARBED WIRE STRETCHERS,
TRUCKS, BAGGAGE BARROWS,
COFFEE AND DRUG MILLS,
STEEL GRAIN SCOOPS,
OIL TANKS, LETTER PRESSES,
STANDARD, LIQUID AND DRY MEASURES.

Do Your Own PRINTING.
etc. is Easy by our printed
instructions. For home or
business use old or young
Send 2 stamps for Catalogue of Presses,
Type, Cards, &c., to factory.
KELSEY PRESS CO.
Meriden, Conn.

AGENTS WANTED. SAMPLES
Goods SELL everywhere, to Everybody.
BIG PAY! A pocket case of EIGHT Lovely
SAMPLES, with our terms, FREE TO ALL.
Send your address, and 2 stamps for mailing. Address
THE HOLLEY WORKS, Meriden, Conn.

FOR SALE

10,000 acres of Hardwood and Agricultural
Lands near Lake Superior, AT \$3.00 TO
\$5.00 PER ACRE. 4,000 acres in the
Iron River Country, at low rates.

A RARE OPPORTUNITY FOR A GOOD FIND.

IF YOU WISH TO BUY
CITY PROPERTY IN DULUTH,
OR PINE, IRON OR FARM-
ING LANDS,
(ADDRESS)

LUCIEN * J. * BARNES,
Room No. 2, Exchange Building,
DULUTH, MINN.

Mills • For • Sale.

Short advertisements will be inserted under this head
for One Dollar each insertion.

FOR SALE.

One-half or the whole of a good water-power roller mill in Wisconsin. Has eight set of 9 x 18 inch rolls and well fixed with Machinery, capacity 100 barrels; also has four run of stone in good order used for Middlings, Rye, Buckwheat and Feed. This is a rare chance for a man with means. Said mill is situated in a village of 1,200 inhabitants with railroad communication, and surrounded by a good farming country, is only five miles from a rapidly growing manufacturing city of 13,000 inhabitants. Terms, three to four thousand dollars down, balance in annual payments for a long time, or I will exchange for good farming or Milwaukee city property. For further particulars, address

BOX 488, MILWAUKEE, WIS.

FOR SALE.

A Flour Mill in a good wheat section on D. R. G. R. R., Colorado. Finest of Water Power. Three runs of Burrs, Centrifugals and Cleaning Machine, all in best conditions. Good reasons for selling, and special inducements given to purchasers. For terms, etc., address FRED. PISCHEL, La Veta, Col.

FLOURING MILL AND ELEVATOR
FOR SALE.

All or one-half interest in a first-class 75-barrel steam flouring mill and elevator. All new and in good order. Located at Meriden, Jefferson Co., Kan., on the Atchison, Topeka & St. F. and the L. T. & S. W. Railroads; in the best wheat and corn growing county of the state. Building, heavy frame, 36x46, three stories, attic and basement, with stone engine room 22x34; all under iron roof. Capacity of elevator, 15,000 bushels; corn crib, dump and sheller. Side track to mill. Two sets 9x18 Allis Rolls; three burrs on wheat, one on corn; flour packer, scales, etc.; two Smith Purifiers; Barnard & Leas Separator; one 12-foot two-reel chest; one 16-foot four-reel chest; corn meal bolt; California Brush Finisher; one Western Corn Cleaner. Grain trade more than pays all running expenses. A splendid chance for a good miller. Exchange trade good. Mill cost over \$16,000. Will sell all for \$12,000, half cash, or half interest for \$6,000, half cash, or, if not sold by July 1st, will be leased for a term of years to responsible parties.

J. O. PEEBLES, Sec'y.
MERIDEN MILL CO., Meriden, Kan.

FOR SALE.

Half interest in 2-run Custom Water Power Flouring Mill. Dwelling house of 9 rooms and Ferry across Wisconsin river. Situated eight miles North of Kibourn City, Wis. Price, \$1600.00. The other interest may be bought at about same price. For particulars address M. F. WALTON, 584 Washington Street, Milwaukee.

FOR SALE OR RENT

THE ELEGANT
STONE
GRIST AND FLOURING MILL,
—IN THE—

VILLAGE OF DELAFIELD, WAUKESHA Co., Wis.

Water Power, unfailing. All in A 1 condition for business. Also two good Residences with Barn and Out-buildings. A bargain for the right man. Address,

M. H. BUCK, WAUSAU, WIS.

PATENTS THOS. P. SIMPSON, Washington, D. C. No Pay asked for patents until obtained. Write for Inventor's Guide.

LEARN TO TELEGRAPH COMPLETE LEARNERS'

OUTFIT, \$3.75; without Battery, \$3.00.

Railway Telegraph Supply Co.,
211 & 213 Randolph Street, -- CHICAGO

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, NO. 124 GRAND AVENUE, MILWAUKEE.
SUBSCRIPTION PRICE—PER YEAR, IN ADVANCE.

To American subscribers, postage prepaid.....	\$1.00
To Canadian subscribers, postage prepaid.....	1.00
Foreign subscriptions.....	1.25
All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.	
Bills for advertising will be sent monthly, unless otherwise agreed upon.	
For estimates for advertising, address the UNITED STATES MILLER.	

[Entered at the Post Office at Milwaukee, Wis., as mail matter of the second-class.]

MILWAUKEE, NOVEMBER, 1886.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

MILWAUKEE AMUSEMENTS.

ACADEMY OF MUSIC.—Performances every evening, Wednesday, Saturday and Sunday matinees.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

DIME MUSEUM—Performances every hour from 1 P. M. to 10 P. M. every day.

NEW PEOPLE'S THEATRE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

MILWAUKEE INDUSTRIAL EXPOSITION closes Oct. 17.

PALACE THEATRE—Every evening, Wednesday, Saturday and Sunday Matinees.

STADT THEATRE—(German)—Wednesday, Friday and Sunday evenings.

THE American Miller for November comes out in an elegant new dress and looks very healthy.

IT is reported that J. D. Nolan will again take charge of the *Millers' Journal*, N. Y., a paper which he established many years ago.

THE firm of Lawrie & Waplington, publishers of the *American Millwright* has dissolved. Mr. J. A. Lawrie continues the publication.

THE potato crop is reported to be light in Great Britain and it is therefore probable that there will be a larger consumption of flour than usual during the next few months.

THE Pennsylvania millers are going ahead with their insurance company. B. F. Isenberg, of Huntingdon, Pa., is the secretary. The company will no doubt be ready for business by Jan. 1st, 1887.

AN unusual number of fires and accidents in flour mills have been reported of late. Carelessness is probably the principal cause of both fires and accidents.

WHILE the milling industry in this country has not been any too good during the past year, we can console ourselves with the knowledge that it has been positively disastrous in other countries.

SOME of our esteemed contemporaries are warmly discussing the value of exhibits of milling machinery at the principal exhibitions held yearly in large cities. It is our opinion that it pays well for manufacturers of milling machinery to make exhibits in such important milling centers as Minneapolis,

St. Louis and Milwaukee. This is also the opinion expressed by several exhibitors at the recent exposition in Minneapolis.

THE Sperry Feeder, manufactured by the Sperry Manufacturing Co., Minneapolis, are constantly in receipt of letters expressing unqualified satisfaction with the workings of the device, from millers in all sections of the country. Orders are pouring in from all directions and the capacity of the present factory is fully employed to keep up with orders.

HENRY SMITH, of the well-known firm of Milwaukee Mill and Elevator Builders, Birge & Smith, has been elected member of Congress for the district embracing the city and county of Milwaukee. He was the candidate of the Peoples or Labor party.

NATHAN M. NEEDL, of the firm of J. C. Ferguson & Co., of Chicago, after borrowing \$400,000 on bogus warehouse receipts has disappeared and is supposed to have gone to Canada. His action has caused the failure of the firm. The creditors will endeavor to hold the Chicago Board of Trade responsible for the reason that they had made the warehouse "regular," on which the bogus receipts were issued, on the same principle that a bank which certifies a check is held liable. Litigation will follow.

MR. GEO. T. SMITH, of the Geo. T. Smith Middlings Purifier Co., Jackson, Mich., favored us with a pleasant call Nov. 10. Mr. Smith reports business as lively as ever in the purifier line and rapidly increasing in the Reel department.

FLOUR MILL DIRECTORY FOR 1886-87.

All persons desiring to reach the milling trade should invest at once in a copy of Cawker's American Four Mill Directory for 1886-87. It is carefully compiled; contains 18,289 addresses in the United States and Canada; Shows in thousands of instances the capacity, power and system of milling (i. e. whether the stone or roller or combined system is used). It also contains a list of millwrights and American and European flour brokers. The book is sold at \$10 per copy and can be obtained by addressing the United States Miller, Milwaukee, Wis.

"THE American Cowboy" is the subject of a timely and instructive article by Joseph Nimmo, Jun., in the November *Harper's*. The public services which the cattle rangers have performed as pioneers of civilization, repressers of Indian outbreaks, punishers of injustice, and leaders in a great industry, are well shown. Special attention is given to the recent northern movements of cattle-raising through Montana, Dakota, Colorado, and Kansas. Some valuable information is given concerning the methods, the extent, and the proceeds of ranching in that section.

AFTER a series of experiments in the Royal Theater, at Munich, it has been decided that the electric light is much healthier for lighting crowded theaters and halls than gas. It does not raise the temperature; keeps the air purer; does not induce moisture and maintains an even temperature in all parts of

the room. The experiments were conducted by Dr. Breslauer of Berlin, Germany.

JOHN L. McMILLAN, of Illion, N. Y., has invented a type-setting machine which will set 75,000 ems of nonpareil type per day operated by two men. His distributing machine will distribute about 150,000 ems per day. Such machines if they are practical in every respect, will go far towards revolutionizing the printing business. They are especially adopted to newspaper and book work.

NEWS.

BURNED—John Kirk's grist mill at Raleigh, Ala.

BURNED—N. S. Goodley's flour mill in Colletin Co., S. C.

DESSERT & BANTES, millers, of Macon, Mo., have dissolved.

C. RAYMOND, miller of Janesville, Wis., has moved to Wicon, Fla.

EVERTS BROS., Jeffersonville, Ind., are building a corn meal mill.

JOSEPH HARRIS is about to build a grist mill at Fergus Falls, Minn.

O. H. TITUS, Wilmington, Del., has invented a new process for purifying flour.

DAVID SAMUELS, Marseilles, Ill., is building a corn meal mill on the Case system.

THE Westi ghouse Machine Co's foundry in Pittsburgh, Pa., burned Nov. 7th.

JOHN SNOW's mill at Ness City, Ks., will start up Nov. 15th. Capacity 50 bbls.

THE flour mill at Bird Island, Minn., owned by Koke Bros., was burned out Oct. 8th.

RECEIPTS of wheat at Duluth since Jan. 1st, have been nearly twelve million bushels.

N. W. HOLT, of Jackson, Mich., has purchased a mill at Manchester and is refitting it.

SINLER & Co's 75 bbl. mill at Hamilton, O., built by the Case Mfg Co. is now completed.

J. SAMMS & Co's mill, capacity 200 bbls., at Portland, Oregon, is about ready to start up.

BROWN & Co's new mill at Simcoe, Ont., will start up about Nov. 1st. Capacity, 150 bbls.

MINNEAPOLIS millers anticipate considerable trouble during the coming winter from lack of sufficient water.

BURNED—Oct. 10th, at Lincoln Ill., the mills belonging to Maloney, Spelman & Co. Loss, \$11,000. Insurance \$5,000.

THE Davis Malt House, at Watkins, N. Y., with a large amount of barley and malt, was burned recently. Loss \$100,000.

DUNCAN D. GARCELEN, a Chicago grain operator has made an assignment. Liabilities said to be about \$70,000, with \$17,000 assets.

AT Coolville, Athens County, O., Oct. 4, the Coolville Flouring Mills burned, involving a loss of \$20,000, with only \$2,500 insurance.

BURNED, Nov. 1st, at Rockford, Ill., Johnson's oat meal mill and A. L. Bartlett's flour mill and elevator. Loss about \$100,000. Insurance \$50,000.

CHARLES ESPLEN, lately with the Pray Manufacturing Co., will at once establish a mill machinery manufactory of his own in Minneapolis.

AT Yorkville, Mich., Oct. 24 D. L. Johnson's large flouring mill was burned. Loss \$18,000; insurance \$8,000. The fire was caused by over-heated journals.

THE Pray Manufacturing Company, Minneapolis, have recently taken contracts as follows: 50 bbl. mill for Thoms Bros., at Newark, Dakota and Ashley, Minn.; 50 bbl. mill for the Dunseith Roller Mill Co., Dakota.

THE D. R. Sparks' Milling company of Alton, Ill., made an assignment Oct. 19. The liabilities are about \$130,000. The failure of the crops for the past three years and the long-continued business depression are the reasons assigned. D. R. Sparks, manager of the company, is president of the Illinois Millers' association. He is a brother of Land Commissioner Sparks.

TED.

BY HERBERT L. BAKER.

Ted was our "devil."
In impish pranks, with any
He held his level—
On me played many.
Pins he put in ye editor's chair,
Daubed up with ink his pet dog's hair,
Oft made the printers loudly swear,
Did Ted.
With dirty face and crooked nose,
Unkempt red hair and ragged clothes,
He was the cause of all our woes,
We said.
One day on my head
A wet sponge he threw;
Then out the door he fled,
As after I flew.
Was I mad? Well, you can just bet!
Oft I suffered and oft made threat;
But now I determined that boy should sweat,
Or die!
A sponge I filled with ink and shellac,
So stood that when he opened a crack
In the door, I could hit ker-smack
His eye.
With hand upraised, I stood there intent,
Waiting a chance my anger to vent,
When happened for me a sad accident
Instead.
As opened the door my charge I threw
Straight to the mark—my aim too true!
'Twas the editor's wife a-coming through—
Not Ted,
The savory smell struck her Greek nose,
The slime and ink ran down her fine clothes,
O'er silken gown to French slippers toes,
Ah, me!
What could I do? What could I say?
"You impudent chap, you will get your pay,
And soon discharge I shall you be to-day,"
Said she.
She ran the shop, so the editor meek
Said I needn't wait the end of the week,
But at once a healthier climate seek.
I sought.
The last I saw of that rascal, Ted,
He peeked 'round the corner, wagging his head,
With triumphant shout—you can guess what I said
And thought
If I got a chance
At his Satanic highness,
Wouldn't I have made him dance?
Well, let's relieve our dryness.

VALUE OF BAKING POWDERS IN MAKING BREAD.

Vesiculated bread is as old as civilization. Every race learned at an early date the culinary virtues of fermentation, and applied the process to all the cereal foods. But little change has been made in leavening during the long years that intervene between that early date and to-day. The baker of Paris and New York employs almost the identical method used by his colleague in Memphis, Babylon or Foo-Chow in pre-Christian centuries.

The physiology of fermentation was not understood until the present century. Chemistry, a new born science then, ascertained that the process instead of being simple was complexed and involved. When yeast or other leaven is added to moistened flour there occur both chemical and biologic changes. The cells of the yeast plant extend from the yeast into the flour itself, and develop in size and increase in number at the latter's expense. The starch cells are broken down, the starch changing into grape sugar, and thence into alcohol.

With these transformations carbolic acid gas is liberated in large quantities. The products of flour carefully baked at this stage are sugar and some gas in the resulting

bread and alcohol, compound ethers and carbonic acid gas. If fermentation be allowed to proceed beyond this point the gluten and other nitrogenous elements are also attacked. These produce putrescent and fetid compounds; while the starch and alcohol molecules break into lactic and acetic acids. Bread or dough is then "sour" and "bad."

The chief object of the fermentation is the liberation of the carbonic acid gas. This is evolved in minute bubbles, both from within and without the starch cells. Much is held in a mechanical way by the surrounding cells, but most escapes into the air. This liberation is accompanied by a swelling of the dough, which assumes a sponge like structure, and which is said to lighten. If the dough be now put into the oven or in anywise be subjected to heat, the bubbles or globules of carbonic acid gas still further expand. The first effect of the heat being to change the outside of the dough into a semi-impermeable crust, the gas escapes with difficulty and the sponginess of the interior is greatly increased. Bread may therefore be described as an artificial nutrious sponge whose pores and interstices are filled with carbonic acid gas.

Baking powders are in general any non-poisonous chemical compound which, when dissolved in an aqueous solution or subjected to change, liberate large quantities of carbonic acid gas. Of the former class a good instance is afforded by a mixture of cream of tartar (or bitartrate of soda), and baking soda (a bicarbonate of soda). These make up the familiar white and blue enveloped seidlitz powders. Dissolved in water, the extra molecule of tartaric acid in the cream of tartar, attacks the baking soda combining with the soda and liberating the carbonic acid gas. This in a seidlitz powder makes the "fizz," and in bread or rolls the lightness so much desired. Of the second class salaratus is a good illustration. In cake or biscuit, the high temperature of the oven breaks the soda into a lower carbonate and frees one atom of carbonic acid gas.

Baking powders may be roughly classified according to the leading chemical compound in their composition. This may be phosphoric acid, tartaric acid, hydrochloric acid, etc. This gives rise to such terms as phosphatic baking powders and cream of tartar powders. They are also named after identical ingredients, such as ammonia or alum. These give rise to the terms ammonia and alum powders. The economic value of a baking powder depends on five elements:

1. Its cost.
2. The amount of carbonic acid gas it liberates when used.
3. Its durability and uniformity.
4. Its freedom from injurious constituents.
5. Its leaving no unpleasant nor unhealthful residue.

N. Y. Herald.

BOND REDEMPTION AND CIRCULATION.

Of the original amount of the Government three per cent loan of \$305,581,250 there has been called in \$228,616,650, besides which \$2,428,050 have been voluntarily surrendered and redeemed: the remainder, \$74,484,700 are subject to call or will be redeemed if voluntarily surrendered; of this amount the National banks own and have on deposit in the Treasury to secure circulation \$62,043,700. Possibly no more calls will be made in the

early future. But there are about \$29,000,000 of called bonds outstanding, which have not been presented for payment. The banks which have the most of these deposited to secure circulation are in no haste to replace them with other and higher priced bonds, and the treasury does not feel disposed to urge them to greater promptness because the clerical labor incident thereto is great and the substitution is going on about as fast as it could be conveniently managed. There is some contraction of National bank circulation, but there is an increase in the issue of one dollar silver certificates, so that the volume of currency in the aggregate is increasing rather than otherwise

NONSENSE.

A SMART YOUNG MAN.—"College man, Eh?" said old Grampus.

"Yes, sir," young Mr. Slim meekly admitted.

"Thought so," growled the old man, "Graduated, I reckon?"

"Yes," young Slim confessed.

"Now," said the old man, "what did you learn when you graduated? Come, speak up if you want the place."

"Nothing," said young Slim, still more meekly: "nothing at all."

"Thought so," roared the old man in triumph; "just what I thought."

"You see," added young Mr. Slim, in a voice that Moses might have envied, "we don't learn anything when we graduate; we have to learn it all before."

NIGHT-CAPS ARE NOT DUTIABLE.—At the foot of W. Edward Avenue. Customs officer: "What have you in that parcel?"

"Only my laundry."

"Open it and let me see."

Man reluctantly opens package, disclosing shirts, collars, cuffs, etc., and a bottle.

"I thought you had nothing but laundry in hat paper. What's in the bottle?"

"Night-caps."

"Pass on, sir."

GOT IT INTO HER HEAD.—San Francisco Chronicle: "Maria, what nonsense it is to talk to that child in that way. She'll never get it into her head."

"My dear, she's a girl and girls are much quicker than boys."

"They don't understand anything when they're women, much less when they're seven years old. What does that little thing know about changing the subject when anything disagreeable is spoken of? Changing the subject! stuff and nonsense."

The mother only repeated her little instructions to the child, and the father went off down town. He came home in the evening and found on a pet garden bed the marks of footprints. He called his little daughter.

"You've been tramping over that bed, when you know I told you not to."

"Papa, did you see any monkeys down town?"

"Monkeys? See here, haven't you been over that bed?"

"Papa, did you meet any pretty children to-day?"

"You little nuisance, did you trample those flour beds or did you not?"

There was a pause.

"Yes, but ma says to always change the subject when it's disagreeable."

BOB INGERSOLL'S SCAR.—Speaking of Col. Ingersoll, writes the New York correspondent of the Hartford Times, reminds me that I once crossed the ocean with him and his family in the autumn of 1878, and I can easily understand how the stenographer has come to swear by him, for he has many charming and fascinating qualities. During the voyage his wife and one of his daughters was seasick from the moment we left Southampton until our good ship, the *Main*, of the North German Lloyd line, reached Sandy Hook. And all this time Col. Ingersoll was as attentive to them as the most devoted husband and father could have been. When they were confined to the stuffy state-room he remained there with them, telling them stories and cheering them up; and when they were ready to come on deck his strong arms carried them up the companion way, tucked them in their steamer chairs, and remained at their side, conversing with them and the circle of passengers which always formed about him, making the deck ring with laughter at his well told and pointed stories, or holding the close attention of all as he argued some controverted points of ethics, politics or religion. On one of these occasions I remember, somebody asked him how he received the scar which he has over or under (I have forgotten which) one of his eyes. "Did you get it on the battlefield?" was asked. "O no," was the response; I will tell you how it came about. I was once on a picnic, where the duty devolved upon me to open the bottles of ginger pop. Now, as I was hard at work at this, one of the corks flew off, and a piece of wire attached to it struck me in the face—so that this scar is due to your temperance drinks."

HE APPROVED OF THE TREATMENT. Old Nelson Bettrage, while working in the woods was bitten by a rattlesnake. In much alarm and in great pain he ran to the house. A physician who happened to be near by was summoned. "Old man," said the doctor, "nothing but whiskey, and a great deal of it can do you any good." But doctor, I am a temperance man; I haven't touched a drop of liquor in thirty years." All the better; the whiskey will have more effect." A boy who had been dispatched with a jug soon returned, and the old man, much against his will, began to drink whiskey. He was slow at first, but after a while he "swigged" it with the appetite of an old-timer. "Well," said the doctor, "you have had enough whiskey now; don't drink any more." "Think I've got er plenty?" "Yes I know it. "Don't yer think that's er leetle of the pizen hangin' round the corners?" "No, I think you are all right." "Don't think that a leetle just ernuff uv it to bother me airtur awhile, has sorter settled down in my feet?" "No." Wall, now, Dock, s'pose we take a drink just for good luck." "I tell you that you must not drink any more." The old fellow sighed, looked at the jug, and asked: "What's become uv the snake?" "One of the boys killed it," the doctor replied. "I'm sorry," said the old man. "Sorry! What for?" "Cause I want it ter bite me again." —*Arkansaw Traveler.*

HIS FIRST MARRIAGE FEE. It was the first wedding. The groom was "new," so was the bride, and the Congregational clergyman had committed matrimony only in his imag-

ination. Finally, however, it was all over; the twain were one flesh and the little wife was weeping in the arms of the mother. The groom slipped up to the nervous minister, and as that gentleman was about to pass out into the night pressed a coin into his hand.

"A twenty dollar gold piece," thought the young preacher. His heart beat faster now than when he was officiating at the wedding. He needed the money so much. Indeed, he often wished his meagre salary was only half its size, he had such a difficulty in collecting it. And now to receive \$20 all at once, why, it—Then it occurred to him that it was customary for the minister to make the bride a present of his first marriage fee. The young man sighed as he removed his thin overcoat and returned to the room where the guests were offering their congratulations to the newly wedded couple.

"I forgot something," said he as he approached the bride. "This is the first marriage fee I have ever received. It is yours. It should be kept as a reminder of this occasion."

The young bride stretched out her hand and the coin rang as it touched her marriage ring. The guests looked up; the unconscious wife did not close her hand upon the fifty cent piece that lay there and all saw it. The minister was glad it was his first marriage, the guests tried to appear as if they did not see the half dollar and the reporter quietly smiled and thought perhaps the young husband was saving up to buy the divorce.—*Chicago Inter-Ocean.*

RAILROAD INTER-STATE TRAFFIC.

The Supreme Court decision that the State Governments, in legislating against railroad discriminations, have no power to deal with the inter-State traffic, but reaffirms the old principle that such legislation would trench upon the constitutional prerogative of Congress, which alone has the right to regulate commerce "between" States. The deduction is inevitably that, sooner or later, Congress will have to exercise its authority to make good the incompetency of the States to protect the people from the class of grievances complained of. Were it otherwise, the spectacle would be presented of thirty-eight different States all endeavoring to "regulate" railroads after their own fashion; thus producing confusion and jarring which would seriously if not fatally interfere with their efficient management, and, by consequence, place the public at a worse disadvantage than they are at present. The decision undoubtedly will impart new interest to the question at the approaching session of Congress. The popular feeling against discrimination is a growing one, especially at the West, and the average Congressman, we may be certain, will not care to antagonize it any more than he can help.—*N. Y. Commercial Bulletin.*

UNITED KINGDOM IMPORTATIONS OF FLOUR.

The *N. Y. Produce Exchange Weekly* says: "The importation of flour into the United Kingdom has quadrupled within the past twenty-one years, having risen from 3,904,471 cwts. in 1865 to 15,832,843 cwts. in 1885. During this period the imports of flour aggregated 169,894 cwts., of which quantity the United States furnished 85,750,286 cwts., or 51.4 per cent. The quantity imported

from the United States has increased in a remarkable manner, having risen from 256,769 cwts. in 1865 and 280,792 cwts. in 1866, to 11,731,903 cwts. in 1885, the proportion furnished by this country in 1885 having been 74.1 per cent., against only 6.57 per cent. in 1865. The quantity imported into the United Kingdom during the first nine months of this year has been 10,796,358 cwts., more than three-fourths of which was furnished by the United States. The enormous growth in the importation of flour must certainly be a depressing factor to the milling industry of Great Britain."

NEW PASSENGER DEPOT.

The new passenger depot of the Wisconsin Central Line in Chicago, on the corner of Polk street and Fifth Avenue, is now open. The building is a commodious and conveniently arranged structure, located in the business centre of the city and readily accessible from all the leading hotels, places of amusement and depots of all connecting lines from the east and south. The choice of a site on the South side for a Chicago terminus will be recognized by travelers as of incalculable benefits to persons who are so detained by business or otherwise that it becomes impossible for them to figure their time of starting with any reasonable approach to accuracy. There is no need of lee-way in time in order to guard against the danger of embarrassing delays at the frequently swung bridges. The train in service of the New Route to and from the Northwest is rapidly being increased and improved; two express trains run daily between Chicago and Chippewa Falls, Eau Claire, St. Paul and Minneapolis; the same number between Chicago and Ashland, Lake Superior; three trains between Chicago and Fond du Lac, Oshkosh, Neenah and Menasha, and four each way between Burlington and Waukesha. The fast train which leaves Chicago at 4 P. M. every day in the year arrives in Ashland, St. Paul and Minneapolis early the next morning, making close connection with all lines diverging. All classes of tickets are accepted on this train. Railroad people and the traveling public are justly beginning to regard the astonishing success attained by the New Route during the few months of its existence with mingled sensations of wonder and respect.

THE ENGLISH MILLING INDUSTRY.

The *Mark Lane Express* (London) says: the flour trade is very much depressed by the large arrivals of American brands, which have been sold at unprecedingly low rates, and it has been stated that not a few country millers have shut down rather than persist in the hopeless attempt to make flour which can compete with the produce of the United States. The future of the British country milling trade is a problem which appears likely to be solved by the American millers simply crushing our native milling industry out of existence. And that is not all, for the entire agricultural interests of this country are being degraded, demoralized, and destroyed by an overwhelming foreign competition."

ITEMS OF INTEREST.

FROM the indications based on the business of the Sault Ste. Marie Canal for the first ten days of October, it would appear that the present slackage facilities will soon be insufficient. The average freight tonnage from October 1st to 10th inclusive, was 27,254 tons daily. The increase over 1885 for the year ending October 10th is 1,062,356 tons. If the record of the first ten days of October is a good indication for the year, the business

will show an increase of about 1,330,000 tons.

WE are in receipt of the annual report of the Commissioner of Pensions for the year ending October 30, 1886. The report shows the number of pensioners at the close of the year was 365,783; there were added during the year 43,086, and 22,089 were dropped from the rolls; the amount paid during the year was \$63,797,831.62; paid on new claims during the year \$22,137,054.16; since 1861 1,018,735 pension claims have been filed of which 621,754 have been allowed; the amount paid for pensions since 1861 is \$808,624,811.57.

SEVERAL American capitalists, including Senator Sharp, of Cambridge, Mass., have organized at Ottawa, Ont., a Canadian anthracite mining company, with a capital of \$500,000 to work valuable coal mines in the Rocky mountains at Banff, on the Canadian Pacific railway. It is proposed to ultimately employ 1,000 men. Twenty thousand tons of coal will be placed on the Winnipeg market next month, and as favorable rates have been granted by the Canadian Pacific, the American capitalists expect to undersell American dealers.

SWEETENED MORTAR. A letter in the London *Times*, by Mr. Thompson Hankey, points out that cane sugar and lime form a definite chemical compound, which has very strong binding qualities, and forms a cement of exceptional strength. Equal quantities of finely powdered lime of a common kind and of good brown sugar, mixed with water, form a mortar which has been found to join stones and even glass with great success. It is important that the lime should be thoroughly air-slacked, for if any dry particles be left they will swell and evidently break the joint. It is stated that this mortar is equal in strength to Portland cement, and that the latter may probably be improved by the addition of sugar, or perhaps even of treacle. A number of small experiments which have been made have proved entirely successful, and it now remains to see whether the material offers advantages in actual work sufficient to pay for its extra cost.

ACCIDENTS RESULTING FROM LOW WATER.

Shortness of water in steam boilers may result from various causes, chief among which are defects in the feeding apparatus, leakage of valves and fittings, defective indicators of the water level, whereby the attendant is deceived as to the actual amount of water in the boiler or boilers, or when all the appliances are in order, the carelessness of the attendant may be the means of bringing it about. In many cases also, it is the result of pure accident, for which no one can justly be held responsible. But whatever may be the cause of low water the effects are generally of such a serious nature that every available precaution should be used to guard against it.

Fig. 1 shows one of the battery of three horizontal tubular boilers, set up and connected in the usual way. The boiler shown in the illustration was the middle one of the battery. From some cause the blow-off valve of this boiler was not perfectly seated one night, and the water leaked out. When the engineer arrived in the morning, he tried the gauge on the first boiler, and finding it all

right, took it for granted that it was all right in the other boilers, and started his fires. When the pressure reached 48 pounds per square inch, the plates in this boiler had become so softened by heat that they ruptured over the fire as shown in the cut.

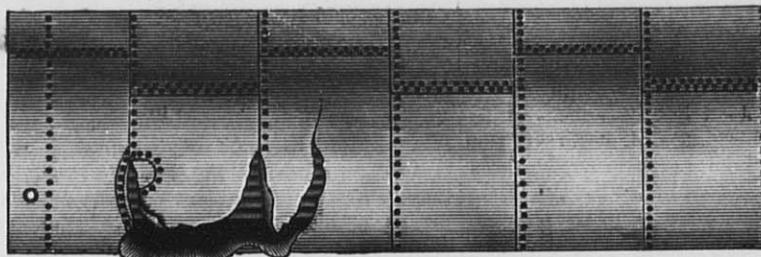


FIG. 1.

Too much care cannot be exercised to make sure that everything is all right before commencing a day's work. The first duty of the engineer when entering the boiler-room in the morning, is to ascertain the state of the water in each and every boiler. Do not touch the fires till this is done.

Fig. 2 shows a boiler of the vertical type, 48 inches in diameter, 8 feet 6 inches long, having about 80 tubes. The shell was 5-16 of an inch thick. The boiler had all the necessary attachments, which were in good condition. The mill for which this boiler supplied steam was shut down on Saturday night, and the fires were banked. The boiler was visited once on Sunday, when the water was found very low. It being necessary to start the whole mill to start the feed pump, it was not done, it not being thought absolutely necessary. At half-past ten Sunday evening, the boiler exploded, and the build-

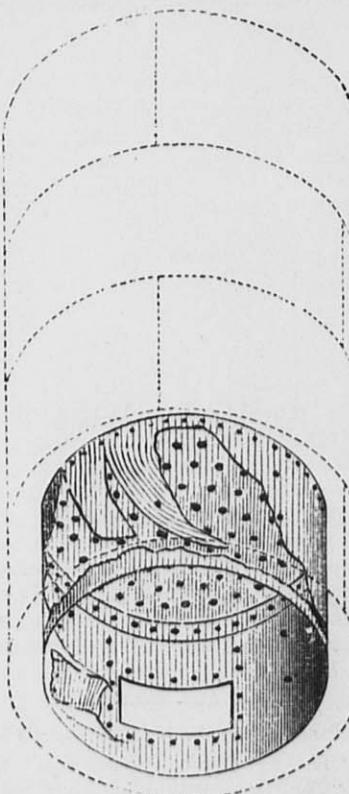


FIG. 2.

ing in which it was situated was set on fire by the explosion and burned. The boiler was thrown nearly three hundred feet. An examination of the fragments by the inspector showed the furnace very badly overheated. It is not best to take any risks under

such circumstances, no matter how much trouble is involved in taking suitable precautions. A boiler when fed by a power-pump driven from the shafting of an establishment of any sort should have in addition either a steam-pump or an injector to supply it with

water when the mill is not running; then there will be no shadow of an excuse for such an accident to happen.

Fig. 4 shows another boiler of the upright pattern, which

exploded a short time since. The feed-pump was out of order and the gauge-cocks stopped up and seldom used. The force of the explosion was sufficient to throw the boiler 300 feet high and 1,000 feet away from its original position. The furnace or fire-box was torn entirely out of the shell. The figure shows the construction of the boiler, and the appearance of the fire-box after the explosion.

The wreck shown by Fig. 4 was the result of placing sole reliance upon the glass water-gauge where the water was bad. The glass indicated the proper amount of water a short time before the explosion occurred, but an examination of the fragments after the explosion showed the sheets to be badly burned. Glass water-gauges should never be depended upon solely, and especially where the water is bad should the gauge-cock be kept in good condition, and frequently tested.

Figs. 5 and 6 show the original form and the appearance after the explosion, of a boiler of the locomotive type which exploded some years since. The following account of the explosion is given in the words of the inspector who visited the scene of the wreck shortly afterwards:

"The boiler was of the locomotive type—a variety used in the oil regions of Pennsylvania—having a narrow base to the fire box and a tapering waist; base 26 inches wide by 4 feet 4 inches long; fire-box, 20 inches wide by 3 feet 10 inches long; front 4 feet high by 3 feet wide at axis; dome 22 inches diameter, by 30 inches high, measured from crown of shell; length over all, about 12 feet; diameter

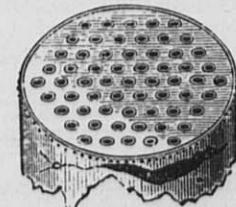
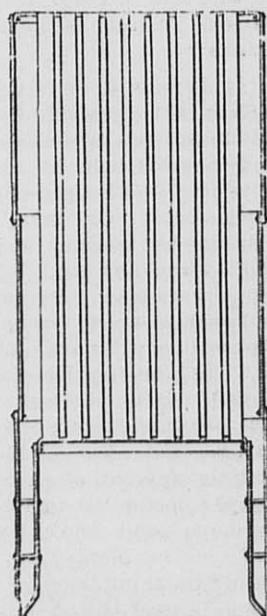


FIG. 3.

of barrel, 30 inches, containing 28 tubes 3 inches diameter by about 8 feet long; thickness of shell, dome, and fire-box, $\frac{1}{2}$ inch iron; tube-sheets, 5-16. The boiler was located in an open field some distance from the works, and covered by a shed; it was used to furnish steam for a small pumping-engine in a large well which was in process of excavation.

"The boiler as it originally appeared is shown by the following figure:

"When the accident occurred—Sunday, about 3 A. M. two men were in or near the shed; one was instantly killed, and his body thrown a distance of 150 feet from the shed; the other, who acted as engineer, was thrown a considerable distance and fatally injured.

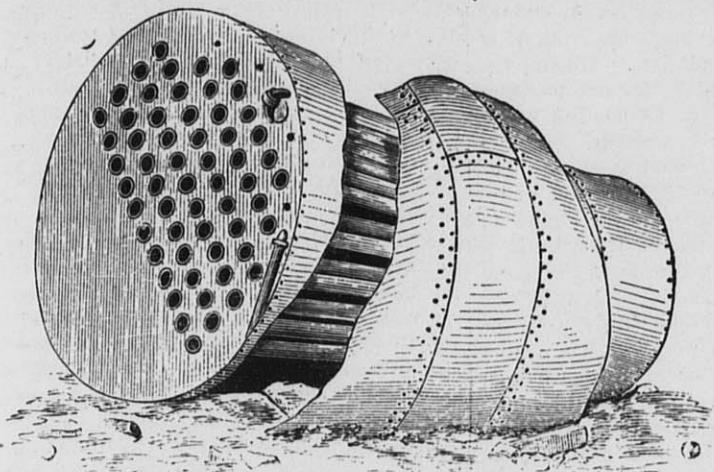


FIG. 4.

He died the following Wednesday morning. He said he had just started the injector to feed water into the boiler when "she blew up."

"The shed was literally reduced to kindling wood and scattered over several acres of ground. The boiler was torn into twelve principal fragments, besides small pieces of plate, stay bolts, and braces, which were scattered in all directions. The barrel of the boiler containing the tubes was thrown end over end, nearly in the line of its axis when in position, a distance of nearly two hundred feet, the tubes left bare by the tearing off of the waist, plunging into the ground, whence it bounded some distance further near the place where the taper-sheets that formed the waist had alighted.

"Most of the other parts were strewn in a curved line to the left, each piece going further until the most remote and largest

"A part of the tube sheet, with half the wrought-iron base-sill was attached, was dropped upon the tool-box of the diggers. The front of the shell, with the front of the fire-box attached, was thrown about 600 feet in a direction nearly opposite to that taken

occurred, and are constantly occurring. We have no space in this issue to describe any of them in detail, but will endeavor to do so in an early issue.

Quite a diversity of opinion exists among engineers of experience as to whether gauge-

"Nothing remained to mark the spot where the boiler stood except the grate-bars, which were forced into the ground that formed the floor of the ash-pit.

"The boiler was nearly new, and fitted with a common lever safety-valve, and three gauge cocks. Fire-box was stayed to shell by screw-stays, spaced about 5 $\frac{1}{2}$ inches apart, and headed over inside and outside. About

twenty of those that supported the furnace-crown were attached in the same way to the 24-inch circle of the shell enclosed between the flange-rivets of the dome.

"The whole load upon the 24-inch circle of the center of the crown-sheet, at 120 pounds per square inch (a pressure that the safety-valve, with the weight at the end of the lever, even allowing it to be in

working order, would have permitted), was 54,000 pounds, or 27 tons. The body of the safety-valve was tapped to receive the steam pipe from the boiler, also the steam-pipe to the engine and the escape pipe from the space above the valve, in the usual manner. The wings of the valve fit nicely into the chamber, and the tendency of the long steam-pipe, perhaps not properly supported or twisted out of its natural easy position, acting as a long lever on this valve-body, is to distort the parts and pinch the wings so that no ordinary force would move the valve from its seat. It is said that this boiler had been worked at a pressure of 130 pounds, which would probably be quite sufficient to weaken this part of the boiler, and the disaster may have occurred from want of strength to sustain such a load any longer.

"The pump, which was located a considerable distance from the shed, may have stopped

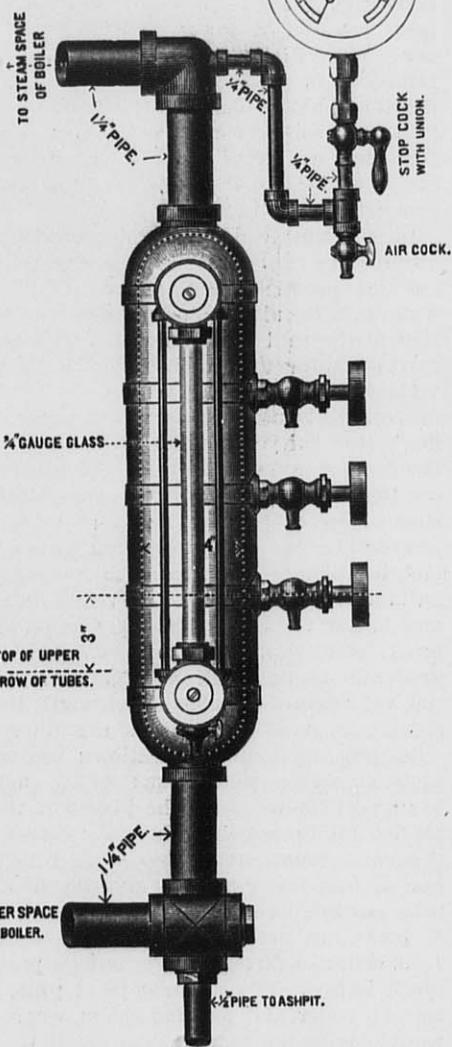


FIG. 7.

cocks or gauge-glasses are the more reliable indicators of the height of water in a steam boiler. Some favor gauge-cocks, and go so far that they will not permit a glass-gauge to be placed upon boilers under their care; while

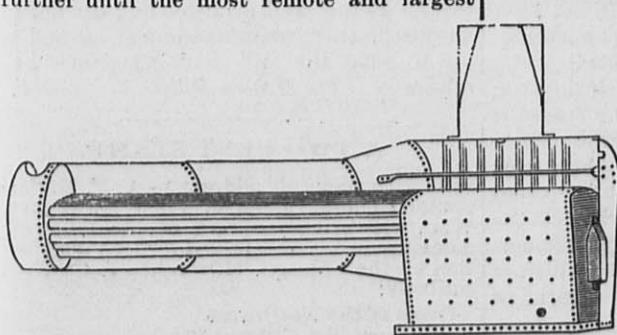


FIG. 5.

landed about 1,500 feet to the left. The crown and sides of the furnace were composed of one sheet, which seems to have been battened down upon the grate-bars, then turned once over upon the ash-heap, with its fire side up.

from accumulation of (water)condensed steam in the steam-chest. The steam would rise until the weakest part let go, and with an inoperative safety valve no warning would be sounded to rouse the drowsy attendants."

The wreck is shown in figure 6.

In addition to such severe accidents as the foregoing, innumerable minor accidents have

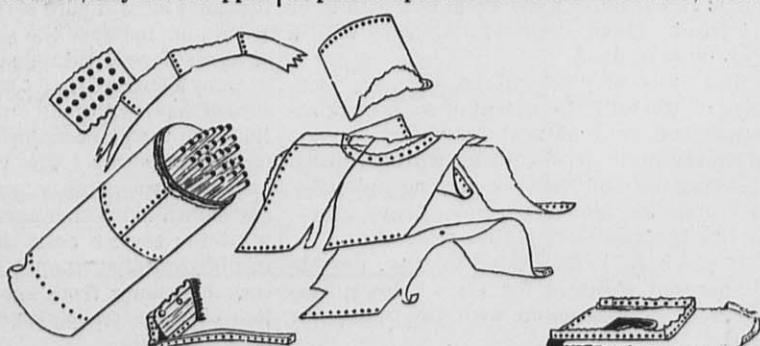


FIG. 6.

others are equally strong in their belief that gauge-glasses are the only reliable indicators, and are opposed to the use of gauge-cocks. As is usual in cases where diametrically opposite views are held by different persons, the

(CONTINUED ON PAGE 12.)

CONSTRUCTION OF FLOUR MILLS.

As in every branch of man's handiwork critics will criticise, therefore we expect more or less criticism on our writings under this heading; so to save the critic and cater to the demands of the day, we will confine our remarks to the construction of roller mills of from 50 to 150 barrels' daily capacity. Any further than speaking of the roller system and the machinery necessary to its successful operation, we shall open no argument pro or con the favorite system of any one. We will lay before you facts, which, combined in practice as well as theory, will result in what we consider the best aggregation. "Despise ye not small things," therefore when we speak of nails, screws, bolts, etc., consider that they are essential to the completeness of the whole structure.

In selecting a site for a mill, one must be governed by the source of wheat supply, market for products, and motive power. If water is to furnish the power then the location of the mill must be with a view to the most advantageous application of that power.

Having determined the capacity of the mill and its location, go for a foundation, and don't stop till you get it. If you can't find it with pick and shovel, send piles down one on top of the other until compelled to stop. Now commence and build; put in good solid stone foundation wall from 3 to 6 feet in thickness according to size of the building, well grouted to above high water, and better if throughout. If you build of brick, start your walls sufficiently heavy, gradually tapering off as approaching the top, yet retaining a sufficient strength to resist the constant tremor of the machinery.

Set posts on secure foundations; use good cast-iron corbels, and beams strong enough to support the weight to be placed on them. Do not build beams into the wall; rather set them in a recess, saving your walls intact in case of fire; frame posts to give the floors a little eambre, like the deck of a vessel, and if joists are used, place them all one way from cellar to garret with centers perpendicularly in line. Flooring may be of pine, except on roller and packing floors, where we would advise the use of ash or maple.

Place windows to well light each floor, and have one or more outside doors on every floor.

Mill stairs are open for a great improvement. They may be made winding, straight, or with a turn, to suit the arrangement of the mill, but never make them less than 8" or 9" tread. Have enclosed stairways with a door on each floor.

The style of roof will be subject to location of the mill, the extent of your bank account and your natural desire for display. However built, it should be with a view to resisting fire and weather, staying up under heavy snows, and down under heavy winds, and be the most serviceable generally.

If you build in a crowded locality, provide tin-covered shutters for all windows; also cover all outside doors with tin, then paint well.

To make a good mill door, use two thicknesses of $\frac{1}{2}$ stuff, matched and laid at an angle of 45 degrees; use wrought nails or 14" No. 14 screws; let each door be in two sections, upper and lower, and provide durable locks and hinges therefor.—*American Millwright.*

"CARRYING CHARGES" ON PRODUCE.

One of the "taxes" on the grain trade, not generally understood, is thus described by the Chicago *Tribune*:

Business on the Chicago Board of Trade during the last few days of the month is generally in large part composed of what is technically known as "changing." Those who have bought property to be delivered at the opening of the month do not want it in their possession, and pay a premium to men who make it a business to carry the grain or provisions for those who operate without having the money required for possession of the property. The amount of the premium is determined by the storage charges plus the cost of insurance and interest on the money employed and the varying sum charged as profit on the accommodation. During the summer season the total of charges averages fully 2c. per month on each bushel of grain, and in winter about half as much, the storage charge being less in cold weather. For hog products the cost of the carrying is not far from 10c. per month on each barrel of pork and 1c. on each pound of lard. It is these carrying charges which form the great standing argument in favor of low prices. The cost being paid by the man who is the nominal owner of the property, the trader who takes an inside view of things evades this responsibility as much as possible, and, as a rule, ranges himself on the short side. It is chiefly a steady adherence to this line of policy that has built up those of the large fortunes on the board which have not been accumulated in the business of carrying for other people.

At first blush the profits of the latter may seem to be very small. They are not seldom represented by zero as calculated on the supposition that all the grain and provisions nominally carried are actually so. The profit comes in on the responsibility assumed which does not involve the outlay or use of capital. It is probable that at the close of this month fully five times as much wheat is turned over as is actually in store in this city at the present moment, and the same rule will apply to a smaller extent in the case of other grain. It is easy to see that if the nominal net cost can be collected on 5,000,000 bushels, while there is no expense except for clerk hire on any but 1,000,000, the profits at 2c. per bushel will be something enormous. And so they are. The fee is exacted in each case because it cannot be said with certainty that in that particular instance the money will not have to be employed, and the man who undertakes to carry a single lot of 5,000 bushels is pretty sure of having to shell out the cash therefor. But with the great majority of the trades it is the other way. The "long" who pays to have his responsibility carried for him from one month to another pays four or five times what the service costs the one who acts the role of capitalist, though he may simply borrow the money from another with which to tide over the trade through the months as they roll along.

It follows that an operator on the long side who should arrange to do his own carrying might count upon being able to do it as cheaply as the service is now performed for him on any particular parcel, and that he would average very much less than the sum he now pays out for the accommodation. In

other words, it need not cost more than a quarter to one-fifth as much as it actually does cost to transfer grain and provisions through the succeeding months, even with no change from the present rates of storage and insurance. This is a fact which does not seem to be understood by the trade, and of course the men who make their money by operating on the present system are interested in keeping its "true inwardness" a secret as long and as closely as possible.

YIELD.

There is one machine among the many employed in milling operations that is not nearly understood in utility; at least its potency to succeed in mill managing is not properly appreciated. It is the automatic grain scale that regularly weighs and registers the wheat as it is manufactured into flour. The business manager of the mill may imagine that whereas he at regular intervals weighs up so much grain into the stock hopper and takes account of all its products, that he has reduced the subject of yield to a science, and has the work indicative of profit or loss down to a very fine point; but it is noticeable that the balance sheet at the end of a season is not in accordance with the interval showing, and this is easily accounted for. But few if any millers like the idea of "getting left" on a test run consequently when the special test is made *special milling* is done, and not infrequently the fear of a poor yield on a trial occasion is too much for the poor miller's squareness, and he will if possible smuggle in some stock and shuffle aside some of the feed, or turn in some high-grade flour and turn aside some of the low-grade. Again, the manager usually accepts a good showing with a better grace than a poor one, and an ordinarily large yield creates a better feeling all around than the inordinately small. A good and reliable grain weigher and register properly manipulated does away with the test as usually conducted, and is at all times a powerful incentive to careful milling and grain buying, while at the same time there is not much room for debate and bickering between the miller and manager as to mistakes in weight of stock or products, as the grain scale is in charge of the managing miller, who has the privilege of overlooking the weighing and counting up of products. Of all the ways of getting at the truth of milling conduct, satisfactory to all around, none are so simple and positively certain as the well arranged and conducted automatic grain scale standing as an indicator to what the mill is doing properly or otherwise.—*The Modern Miller.*

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30. **Leoline,** A Novel. By Mary Cecil Hay, author of "Brenda Vere."
31. **Gabriel's Marriage,** A Novel. By Wilkie Collins, author of "The Woman in White," etc.
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(CONTINUED FROM PAGE 9.)
truth is found on the intermediate ground between the conflicting opinions.

Every steam boiler should be provided with both gauge-cocks and a gauge-glass. Neither should be relied upon exclusively, both should be referred to constantly, as, if this is done, the risk of being deceived in regard to the amount of water in a boiler is reduced to a minimum.

The best way to connect gauge-cocks or gauge-glasses is to connect each one independently of the others, and run the pipe straight through the front connection of the boiler. The connecting pipes should be of ample size, and that portion of them be exposed to the heat of the escaping gases in the smoke-box, covered with some good fire-proof non-conducting covering, to prevent ebullition and foaming of the water, and burning on of sediment in this portion of the pipes.

Where gauge-cocks and glass are both put on to the same connection, or where a water-column or combination is used, the connecting pipes should be larger, not less than 1½ inch pipe should be used, and the body of the water-column should have a clear diameter inside of at least 3½ inches; four inches would be better. The connecting pipe should be arranged with Ts at each bend (bends should be as few in number as possible), so that by taking out a plug the pipes can be scraped free from sediment or scale without disconnecting them. This enables the connections to be kept perfectly clean, when the worst water is used, without any trouble.

We insert here a cut, Fig. 7, to show what our experience has shown us is a good form of connection for a "combination" water column.

RECENT MILLING PATENTS.

The following list of Patents relating to milling interests, granted by the U. S. Patent Office during the past month, is specially reported by Stout & Underwood, Solicitors of Patents, 66 Wisconsin st., Milwaukee, Wis., who will send a copy of any patent named to any address for 50 cents:

Issue of October 5, 1886: No. 350,171—Separator or cleaner, A. Swingle, San Francisco, Cal.; No. 350,286—Dust Collector, G. Bigler, Buffalo, N.Y.; No. 350,298—Chaff guide for grain separators, E. O. Dockendorf, Sheldon, Iowa; No. 350,385—Middlings purifier, U. H. Odell, Ohio.

Issue of October 12, 1886: No. 350,509—Grinding mill, H. F. Stone, Appleton, Wis.; No. 350,600—Flour chest, J. Ozbenberger, Middletown, Cal.; No. 350,658—Automatic grain weighing and registering apparatus, C. L. Burgess, Woodhull, Ill.; No. 350,816—Automatic grain weigher and register, J. J. T. Dehekk, Sedgwick City, Kan.

Issue of October 19, 1886: No. 350,945—Machine for splitting grain, C. W. Roth, Evansville, Ind.; No. 351,014—Conveyor, A. Wissler, Brunersville, Pa.; No. 351,023—Dust Collector, B. A. Davis, Bermuda Ochre Works, Va.; No. 351,156—Grain cleaner, C. R. Bomboy, Hazleton, Pa.; No. 351,217—Grain separator, H. C. Smith and W. H. Bruce, Bertrand, Neb.; No. 351,307—Middlings purifier, H. J. Brinkman, Minneapolis, Minn.

Issue of October 26, 1886: No. 351,562—Middlings purifier, O. L. Anderson, Pleasantville, Ind.

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The *Youth's Companion* celebrates this year its sixteenth anniversary. It might well be named the "Universal Companion," so widely is it read and so wisely adapted to all ages. Its contributors are the most noted writers of this country and of Europe, among them are W. D. Howells, J. T. Trowbridge, Prof. Huxley, The Duke of Argyle, The Marquis of Lorne and Princess Louise, Archdeacon Farrar, C. A. Stephens, Admiral David Porter, Lieut. Schwatka, and many others. We do not wonder that the *Companion*, with such contributors, has nearly 400,000 subscribers. It costs but \$1.75 a year, and a subscription sent now is credited to January, 1888.

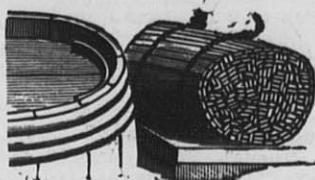
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The Serial Stories include "Juan and Juanita," an admirably written story of Mexican life, by Frances Courtenay Baylor, author of "On Both Sides"; also, "Jenny's Boarding-House," by James Otis, a story of life in a great city.

Short Articles, instructive and entertaining, will abound. Among these are: "How a Great Panorama is Made," by Theodore R. Davis, with profuse illustrations; "Winning a Commission" (Naval Academy), and "Recollections of the Naval Academy"; "Boring for Oil" and "Among the Gas-Wells," with a number of striking pictures; "Child-Sketches from George Eliot," by Julia Magruder; "Victor Hugo's Tales to His Grandchildren," recounted by Brandie Matthews, "Historic Girls," by E. S. Brooks. Also interesting contributions from Nora Perry, Harriett Prescott, Spofford, Joaquin Miller, H. H. Boyesen, Washington Gladden, Alice Wellington Rollins, J. T. Trowbridge, Lieutenant Frederick Schwatka, Noah Brooks, Grace De Lio Litchfield, Rose Hawthorne Lathrop, Mrs. M. S. B. Platt, Mary Mapes Dodge, and many others, etc., etc.

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THE CENTURY.

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THE CENTURY is an illustrated monthly magazine, having a regular circulation of about two hundred thousand copies, and often reaching and sometimes exceeding two hundred and twenty-five thousand. Chief among its many attractions for the coming year is a serial which has been in active preparation for sixteen years. It is a history of our own country in its most critical time, as set forth in

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This great work, began with the sanction of President Lincoln, and continued under the authority of his son, the Hon. Robert T. Lincoln, is the only full and authoritative record of the life of Abraham Lincoln. Its authors were friends of Lincoln before his presidency: they were most intimately associated with him as private secretaries throughout his term of office, and to them were transferred upon Lincoln's death all his private papers. Here will be told the inside history of the civil war and of President Lincoln's administration,—important details of which have hitherto remained unrevealed, that they might appear in this authentic history by reason of the publication of this work,

THE WAR SERIES,

which has been followed with unflagging interest by a great audience, will occupy less space during the coming year. Gettysburg will be described by Gen. Hunt (Chief of the Union Artillery); Gen. Longstreet, Gen. E. M. Law, and others; Chickamauga, by Gen. D. H. Hill; Sherman's March to the Sea, by Generals Howard and Slocum. Generals Q. A. Gillmore, Wm. F. Smith, John Gibbon, Ho'ace Portier, and John S. Mosby will describe special battles and incidents. Stories of naval engagements, prison life, etc., etc., will appear.

NOVELS AND STORIES.

"The Hundred Men," a novel by Frank R. Stockton, author of "The Lady, or the Tiger?" etc., begins in November. Two novelettes by Geo. W. Cable; Stories by Mary Hallock Foote, "Uncle Remus, Julian Hawthorne, Edward Eggleston, and other prominent American authors will be printed during the year.

SPECIAL FEATURES

(with illustrations) include a series of articles on affairs in Russia and Siberia, by George Keenan, author of "Tent Life in Siberia," who has just returned from a most eventful visit to Siberian prisons; papers on the Food Question, with reference to its bearing on the Labor Problem; English Cathedrals; Dr. Eggleston's Religious Life in the American Colonies; men and women of Queen Anne's Reign, by Mrs. Oliphant; Clairvoyance, Spiritualism, Astrology, etc., by the Rev. J. M. Buckley, D. D. editor of the *Christian Advocate*; astronomical papers; articles throwing light on Bible history, etc.

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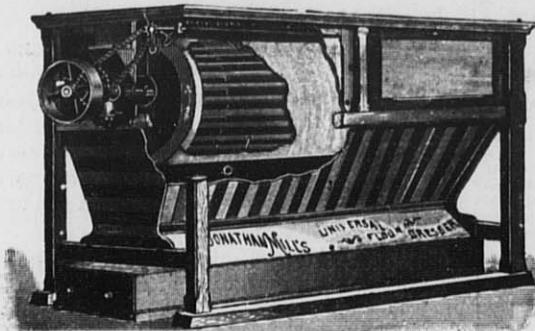
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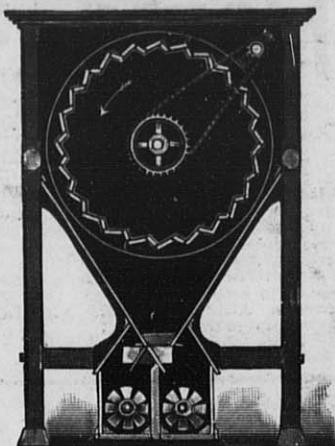
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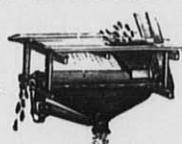
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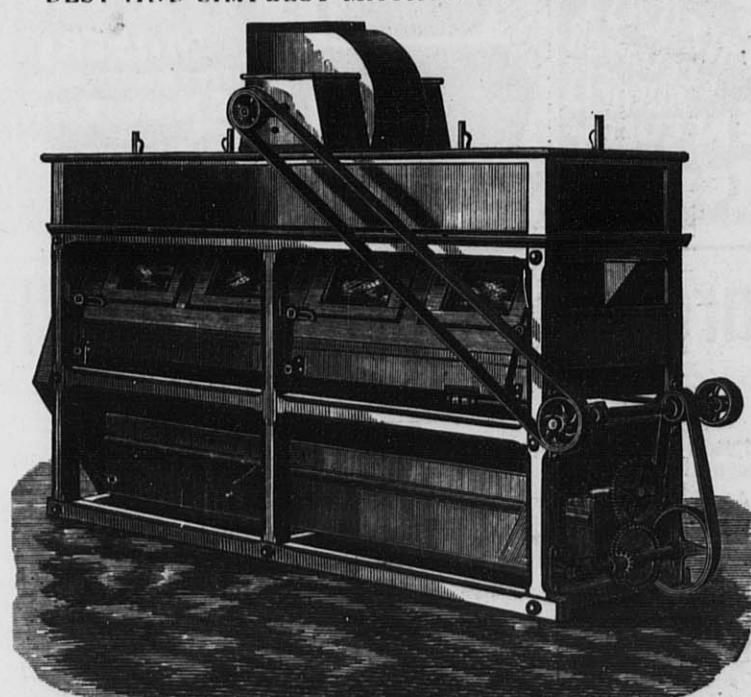
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